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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------|------------------|
| 10/645,538 | 08/22/2003 | Kaoru Ishida | 33216M549654 | 8103 |
| 441 | 7590 | 01/28/2005 | EXAMINER | |
| SMITH, GAMBRELL & RUSSELL, LLP 1850 M STREET, N.W., SUITE 800 WASHINGTON, DC 20036 | | | LEE, BENNY T | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2817 | |

DATE MAILED: 01/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.



Patent and Trademark Office

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FILED DATE

EXAMINER

APPROVED

DATE RECEIVED

- ☐ This application has been examined ☐ Responsive to communication filed on _____ ☐ This action is made final.

A shortened statutory period for response to this action is set to expire thirty (30) month(s) days from the date of this letter. Failure to respond within the period for response will cause the application to become abandoned. 35 U.S.C. 133

Part I THE FOLLOWING ATTACHMENT(S) ARE PART OF THIS ACTION:

- | | |
|---|---|
| 1. <input type="checkbox"/> Notice of References Cited by Examiner, PTO-892. | 2. <input type="checkbox"/> Notice re Patent Drawing, PTO-948. |
| 3. <input type="checkbox"/> Notice of Art Cited by Applicant, PTO-1449. | 4. <input type="checkbox"/> Notice of Informal Patent Application, Form PTO-152 |
| 5. <input type="checkbox"/> Information on How to Effect Drawing Changes, PTO-1474. | 6. <input type="checkbox"/> _____ |

Part II SUMMARY OF ACTION

1. ☒ Claims 1-13 are pending in the application.
Of the above, claims _____ are withdrawn from consideration.
2. ☐ Claims _____ have been cancelled.
3. ☐ Claims _____ are allowed.
4. ☐ Claims _____ are rejected.
5. ☐ Claims _____ are objected to.
6. ☒ Claims 1-13 are subject to restriction or election requirement.
7. ☐ This application has been filed with Informal drawings under 37 C.F.R. 1.85 which are acceptable for examination purposes.
8. ☐ Formal drawings are required in response to this Office action.
9. ☐ The corrected or substitute drawings have been received on _____ Under 37 C.F.R. 1.84 these drawings are ☐ acceptable; ☐ not acceptable (see explanation or Notice re Patent Drawing, PTO-948).
10. ☐ The proposed additional or substitute sheet(s) of drawings, filed on _____ has (have) been ☐ approved by the examiner; ☐ disapproved by the examiner (see explanation).
11. ☐ The proposed drawing correction, filed _____, has been ☐ approved; ☐ disapproved (see explanation).
12. ☐ Acknowledgement is made of the claim for priority under U.S.C. 119. The certified copy has ☐ been received ☐ not been received ☐ been filed in parent application, serial no. _____; filed on _____.
13. ☐ Since this application appears to be in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under Ex parte Quayle, 1935 C.D. 11; 453 O.G. 213.
14. ☐ Other

In view of applicant's cancellation of all claims except claim 8, the restriction requirement has been rendered moot.

The disclosure is objected to because of the following informalities: Page 1, in the cross reference to related applications, note that --(US Patent 6,690,249)-- should be inserted after "March 22, 2002" for completeness. Page 3, next to last line, note that "n-way port" should be rephrased as -- n ports -- for clarity of description. Page 4, line 11, note that "having a problem of difficulty in miniaturization" should be rephrased for clarity. Page 4, fifth line from bottom and in the replacement paragraph to pages 4, 5, 11th line therein; note that "n-splitting/n-combining" should be rephrased as --n-way splitting/ n-way combining -- for clarity of description. In the replacement paragraph to pages 5, 6, second line therein, note that --each-- of should proceed "first" for a proper characterization. Page 8, in the replacement to the second full paragraph, note that "multi-splitter" should be rephrased as -- multi-output -- for clarity of description. In the replacement paragraph to pages 8, 9, 15th line therein, -- 4-way split -- is suggested and in the 30th line therein, "050" should correctly --7050 --. Page 12, line 18, note that "comprising two power splitter circuits" is not a correct characterization. Note that Fig. 2D includes a "power splitter circuit" and a --power combiner circuit --. Page 13, in the replacement to the first full paragraph, first line therein, note that -- splitter/combiner -- is suggested. In the replacement paragraph to pages 22, 23, fourth line therein, note that -- N way splitting-- is suggested for clarity. Note that the respective "wiring layer" of fig. 2 need description in the specification. Note that reference label "621" of fig. 13 needs description in the specification. Appropriate correction is required.

The drawings are objected to because of the following: In fig. 2B, note that reference labels -- (201, 202, 203) -- need to be labeled as per the specification description; In fig. 2D, note that the drawing figure should be designated as --PRIOR ART --; In fig. 3, note that "power 4-splitter" on the left hand side of the drawing should be rephrased as -- 4 way power splitter -- and "power 4-splitter" on the right hand side of the drawing should be rephrased as -- 4 way power combiner -- for proper characterizations; In fig. 4B, note that reference label --416-- needs to be labeled as per the specification description; In fig. 8, note that reference label "303" should correctly be -- 3030 --; In fig. 11, note that "power n-" should be rephrased as -- n-way power-- at each instance for clarity of description; In fig. 13, note that "convertor" should be rewritten as -- transformer-- at each instance for consistency with the specification. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the

drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bouny in view of Fujiki (both of record in the parent application).

Bouny (fig. 1) discloses a multi-layer balun circuit (e.g. see fig. 2) on a multi-layered printed circuit board comprising: a "main" line with conductors (14, 15) forming one conductive layer and a plurality (i.e. a pair) of electromagnetic coupling lines (16, 17) are commonly formed on an alternating conductive layer. As evident from fig. 1, the balun (10) has the main line connected to a single ended signal generator (101) at

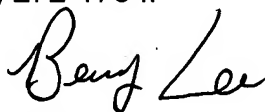
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single ended terminal (11) at one end of the main line, while the other end of the main line is grounded at ground (13). Also, as evident from fig. 1, one end of the pair of coupling lines is grounded at grounds (18, 19), while the other end of the pair of coupling line provides 180 degree out of phase signals at balance ports (12). Note that Bouny differs from the claimed invention in that an input line and balance output lines have not been disclosed.

Fujiki discloses a balun of like configuration to that disclosed in Bouny (e.g. see fig. 3). Note in particular that the multi-layer balun includes an input line (20) of the single end type coupled to a "main" line (22). Moreover, note that the coupling lines (26, 28) have at the balance port thereof a pair of slanted output lines coupled thereto.

Accordingly, it would have been obvious in view of the references, taken as a whole, to have modified the Bouny balun configuration to have included an input line and a balance pair of output lines such as taught by Fujiki. Such a modification would have provided the advantageous benefit of connecting the main and coupling lines to input and output terminals at side edges of the multi-layer structure (e.g. see fig. 1 in Fujiki), thereby suggesting the obviousness of such a modification.

Any inquiry concerning this communication should be directed to Benny Lee at telephone number (571) 272-1764.



B. Lee/ds

01/24/05

BENNY T. LEE
PRIMARY EXAMINER
ART UNIT 2817